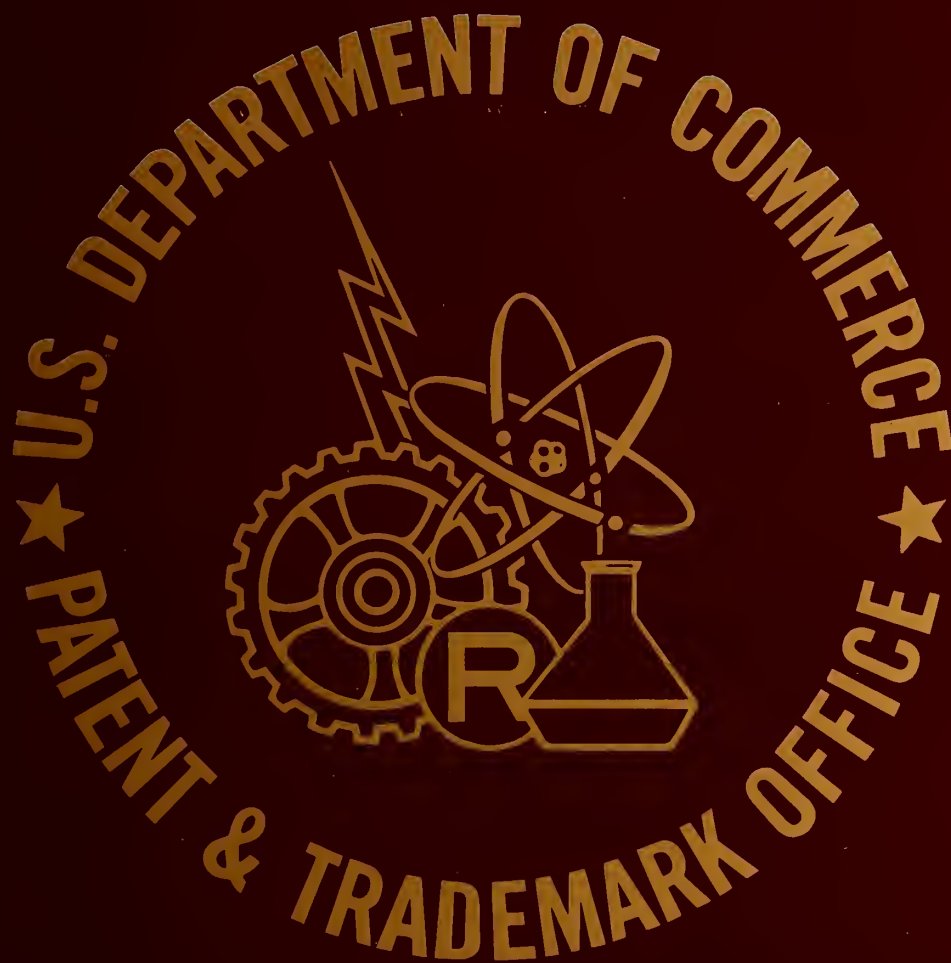
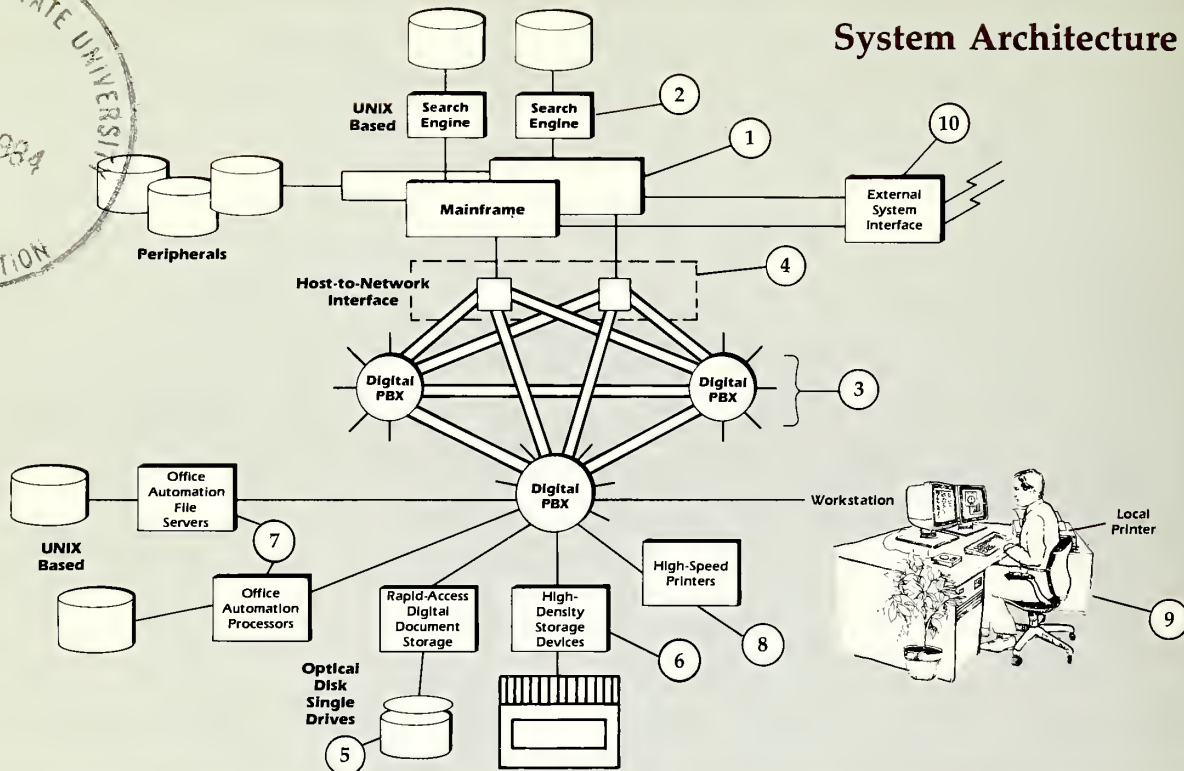


Automating the U.S. Patent and Trademark Office



System Architecture for Automated Patent System

System Architecture



1 Mainframe. Two very large-scale mainframes provide indexes to approximately 30 terabytes storage capacity in a distributed system; support search and retrieval; manage system; maintain text and image data base.

2 Search engines. 40 or more microcomputers act as parallel processors for text and classification searches, using Boolean logic to locate word and symbol combinations and relationships in text data base.

3 Digital PBX. A network based on digital switches unites all elements of the system. Connections over the network are transparent to end users.

4 Host-to-network interface. Translates network protocol between the mainframe and

the workstations and other devices connected to the mainframe via the network.

5 Rapid-access digital document storage. Single optical disk contains frequently accessed information, such as post-1970 granted patents.

6 High-density storage devices. Optical disk libraries, or "juke boxes" store a second copy of frequently used information and two copies of less frequently accessed information.

7 Workstation servers. Office automation file server allows user to store individual work. Office automation processor provides electronic mail delivery, spreadsheet capacity, calendar, word processing, etc. Latest software deliveries are stored in local storage devices,

automatically update workstation software.

8 Central and group laser printer. Centralized printing provides 300 line-per-inch page images with each printer operating at more than 10 pages per minute.

9 Workstations. For use of examiners, paralegal, technical and clerical personnel, more than 1,800 workstations are the primary user interface with the patent processing system. Workstations provide access to the system for patent application processing and full office automation functions. See more detailed description on facing page.

10 External system interfaces. Gateways that provide telecommunication with commercial data bases.

The Plan for Automating the U.S. PTO

The U.S. Patent and Trademark Office (PTO) is automating its procedures in accordance with a plan approved in 1983. The plan encompasses three functional areas and three consecutive stages. The functional areas are trademark automation, patent and data base automation, and automatic data processing support systems.

The consecutive stages provide milestones for developing each of the three functional areas. The Stage 1 milestones include automating patent group 220 as a test for the entire Automated Patent System and completing the automation of both public search and internal functions for the trademark system. Management systems will continue to rely on existing computer systems during this stage.

During Stage 2, all internal functions for both patent and trademark operations will be fully

automated. Patent documents will be stored in a form readily accessible for search and retrieval. This means that all documents will be available to all users at all times—they will never be misplaced, misfiled or "in use" by another person. The system will include a fully integrated management information system, and preliminary automation will be provided for the public search files.

In Stage 3, the last stage of system development, public access to the system will be expanded. Direct on-line exchange of information with international patent and trademark systems will be developed. Other automatic systems to support dissemination of information also will be extended.

Highly competitive procurement processes were

followed in selecting contractors to develop the various systems. The MITRE corporation was awarded a contract in November 1982 to support the PTO. The support included requirements analysis for both patents and trademarks, engineering studies and help in evaluating contractor proposals. A contract to design and implement the Automated Patent System was awarded to Planning Research Corporation in April 1984, with Chemical Abstracts Service as a major subcontractor. This contract encompassed the overall system design, software development and hardware acquisition, as well as the integration, test and maintenance of the system.

Contract awards for the capture of imagery and text complete the major acquisitions necessary to fulfill the plan for automation of the U.S. Patent and Trademark Office.

Plan Milestones

Stage 1	Stage 2	Stage 3
Patent ● Group 220 Automated Trademarks ● Internal Functions Automated ● Public Search Automated Management ● Current Systems 1983-1985	Patent and Trademarks ● All Internal Functions Automated ● Paperless Search Files (100% Integrity) ● Initial Public Search Automated Management ● Fully Integrated Management Information System 1986-1987	Patent and Trademarks ● Expanded Public Search ● Expanded Telecommunications ● Extended Dissemination Support ● Direct Exchanges with Other Patent Offices 1988-1990

The Workstation is "The System" for Most Users

More than 1,800 workstations will be "the system" for most of its users. When documents arrive in the mailroom, they will be electronically entered into the system; from that time on, all processes related to patent applications and grants will be handled at workstations.

Most workstations have two 150-line-per-inch 17-19" display screens that display full-size pages larger than the original—either text or graphic images—zoom to 300 lines per inch for detail and can "window" multiple displays.

Designed to be comfortable for people, the workstation uses a "mouse" or graphic pad, has a movable keyboard and a local printer. It contains microprocessors, 300 megabytes of local storage and software.

In addition to highly specialized application software, each workstation provides office automation functions such as electronic mail, calendar, calculator, directory search, spreadsheet, text comparison, word processing and business graphics.



Entire Data Base on Optical Disks

The electronic, digital data base will contain both text and image data. Text data will include patents issued since 1970, all new patent applications, Japanese and European patent abstracts in English, PTO manuals, patent statutes and appeal board decisions. Digital facsimile images will include patent drawings since 1970, all pre-1970 U.S. patents, and selected literature and foreign patents.

Data will be accessible through a full-text word search and through document identification on the basis of information such as the U.S. patent classification system or the international patent classification system.

Documents that are accessed frequently will be stored on a single optical disk providing rapid access. A second copy of all frequently accessed documents, as well as two copies of all other documents, will be stored on as many as 200 high-density optical disks. These will be contained in "juke box" components, with the system automatically locating the correct disk for requested data, mounting it on line and transmitting the image to the workstation.

System Benefits

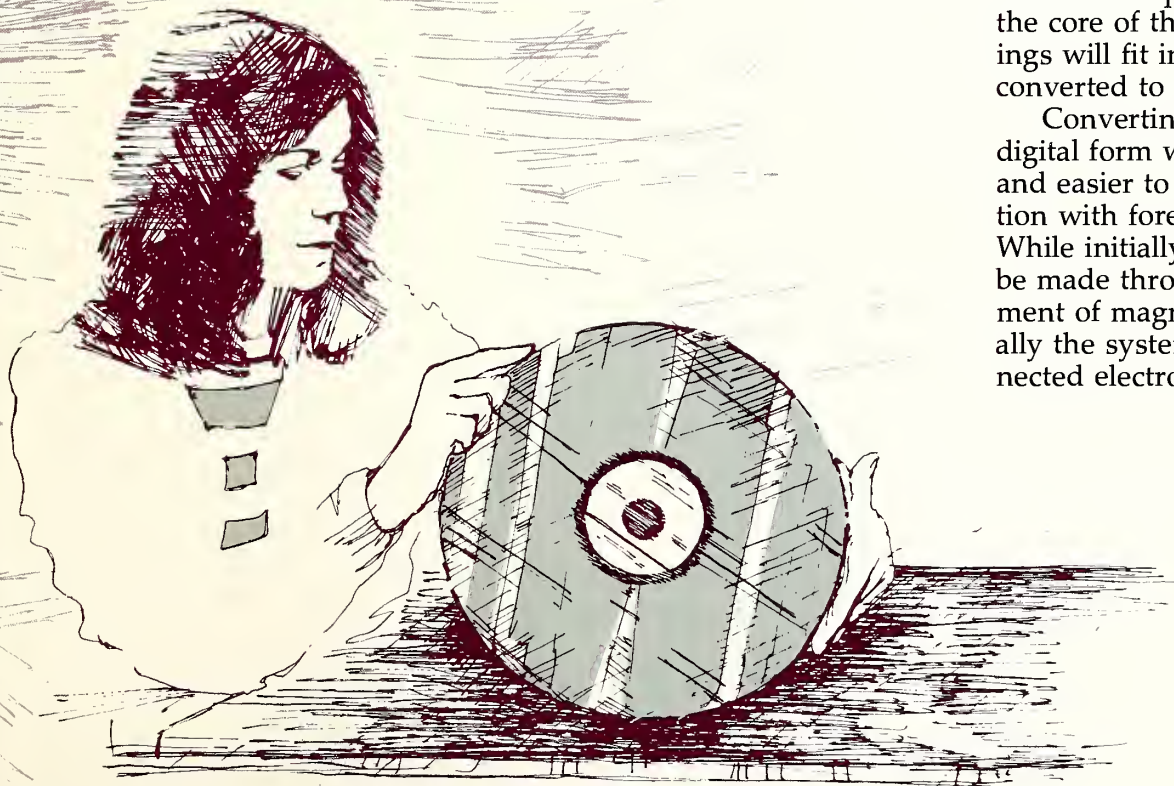
The Automated Patent System provides a number of benefits to the U.S. Patent and Trademark Office. Most important, it will make all documents available to all authorized users at all times—the paperless data base means that documents can never be misplaced, misfiled or "in use" by another person.

Rather than spending hours searching for paper documents, PTO personnel will use their workstations to search for—and find—all relevant data and examine any document within seconds. All patents and applications will be integrated into the system, so that regardless of their status they will be available for review.

The improved system will increase the integrity of the patent issuance operation and therefore the quality of a granted patent.

The entire document data base that in paper form occupies the core of three 11-story buildings will fit into one room when converted to optical disks.

Converting all documents to digital form will make it faster and easier to exchange information with foreign patent systems. While initially the exchange will be made through physical shipment of magnetic tapes, eventually the systems can be interconnected electronically.



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